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EXAMINER

JOHNSON, TIMOTHY M

ART UNIT PAPER NUMBER

2625

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5

Please find below and/or attached an Office communication concerning this application or proceeding.

15

Office Action Summary

Application No.

09/442,445

Applicant(s)

Stoica

Examiner

T. Johnson

Group Art Unit

2625

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☐ Responsive to communication(s) filed on _____.
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-25 is/are pending in the application.
- Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-8, 15, & 20-25 is/are rejected.
- ☒ Claim(s) 9-14 & 16-19 is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
 - ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
 - ☐ received in Application No. (Series Code/Serial Number) _____.
 - ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

*Certified copies not received: _____.

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2 ☐ Interview Summary, PTO-413
- ☒ Notice of Reference(s) Cited, PTO-892 ☐ Notice of Informal Patent Application, PTO-152
- ☒ Notice of Draftsperson's Patent Drawing Review, PTO-948 ☐ Other _____

Office Action Summary

Part III Detailed Action

Drawings

1. The drawings are objected to as noted on the PTO-948. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 6-8, 15, 20-22, and 24-25 are rejected under 35 U.S.C. § 102(b) as being anticipated by Rosenberg et al., 5,450,562.

For claim 1, a method for compressing an image, the image including pixels arranged along a plurality of raster lines, the method comprising dividing select pixels in the image into slices, the slices including pixels positioned adjacent to one another is provided by Rosenberg in at least Fig. 6 and c. 5, line 64 – c. 6, line 28, where the image is divided not only into raster lines, but also into adjacent slice groups of pixels within the slices of raster lines.

Representing each slice in the form of an input slice-value is provided by Rosenberg in at least the third full paragraph in c. 6, by representing the input slice by a byte value.

Comparing each input slice-value to determine if the input slice-value corresponds to a memory slice-value in a memory store is provided by Rosenberg in block 108 in Fig. 7.

Generating an output based on the comparing, the generating resulting in a compressed image is provided by the output code words in blocks 110 and 114 in Fig. 7 of Rosenberg.

For claim 2, wherein the memory store is a cache memory is provided by Rosenberg in at least Fig. 7 with explicit reference to "cache".

For claim 3, wherein the step of generating an output includes the step of outputting at least one of an output slice-value and an output encoded-value is provided by Rosenberg in blocks 110 and 114-116 of Fig. 7.

For claim 4, generating an output slice-value if the input slice-value does not correspond to a memory slice-value in a memory store; and generating an output encoded-value if the input slice-value does correspond to a memory slice-value in a memory store is provided by Rosenberg in blocks 110 and 114-116 of Fig. 7.

For claim 6, each slice is a two-dimensional array of pixels, since pixels are two dimensional entities as each pixel has width and height, and Rosenberg provides for a plurality of pixels in a slice as shown in at least Fig. 6. Rosenberg is also clearly not limited to only one row of pixels as indicated in the last full paragraph in c. 4 and the first full paragraph in c. 9, and Rosenberg also teaches that the context can be two-dimensional (first full paragraph in c. 6 and third full paragraph in c. 7), so that a corresponding two-dimensional set of pixels to be coded (first full paragraph in c. 6) would be used.

As for claim 7, the 2D pixel array defining a rectangle of width w and height h is provided by Rosenberg in at least Fig. 6.

For claim 8, the memory store possessing addresses including a lowest address, and comparing each input slice value includes determining if the memory slice value is disposed at the lowest address in memory is at least inherently provided, since Rosenberg explicitly provides for a cache memory with addresses and matching the values in the addressed cache, which includes a lowest address in at least the penultimate full paragraph in c. 6.

For claim 15, the memory possessing addresses is provided by Rosenberg in at least the penultimate full paragraph in c. 6. Decompressing the compressed image including reading an item from the compressed image, the item being one of a slice value or an encoded value which

represents an address location in the memory store and if the item is an encoded value then using the encoded value to read a slice value from the memory is provided by Rosenberg in at least the paragraph bridging cols. 6-7, and Fig. 8.

For claim 20, wherein the memory store is initialized similarly before compressing and decompressing an image, and wherein information regarding the content of the memory store in the compression process is not needed in the decompression process is provided by Rosenberg in the second full paragraph in c. 6 and the second full paragraph in c. 7 for initialization, and the memory content of the compression process is not needed, since the memories are initialized, and the decompression process uses its own memory, and any new value encountered also does not use the compression memory store – see the decompression process in Fig. 8 of Rosenberg.

For claim 21, see the rejection of at least claim 1, and the paragraph bridging cols. 3-4 and the paragraph bridging cols. 4-5 of Rosenberg, which provide for means in the form of a computer system.

For claim 22, wherein the output is in the form of at least a portion of repeating values is provided by Rosenberg. In the case of sending the actual byte (last full paragraph in c. 6), the byte values can be all zeros or all ones or any combination thereof, and in general, the bits will repeat. Furthermore, code words can also consist of repetition as shown for example near the bottom of col. 9.

For claim 24, wherein the memory store is a cache memory is provided by Rosenberg in at least Fig. 7 with explicit reference to "cache".

For claim 25, see the rejection of at least claims 3-4.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5-6 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenberg et al., 5,450,562, as applied to claims 1-4, 6-8, 15, 20-22, and 24-25 above, and further in view of Park, 5,561,464.

For claim 5, wherein generating an output based on the comparing includes the output being at least partially a series of repeating values, the output being further processed with run length coding is not explicitly provided by Rosenberg, although run length coding is mentioned in the Background of Rosenberg. Park provides for further compression by run length and variable length coding in at least the first and second full paragraphs of c. 7. It would've been obvious to one having ordinary skill in the art at the time the invention was made to run length code the output values of Rosenberg as taught by Park, since they both provide for pattern matching coding, and because Park provide for further compression, and thus further efficiency, by run length coding output values.

For claim 6, each slice is a two-dimensional array of pixels is not explicitly provided by Rosenberg, but is conventional and well known, and is provided by Park in at least Figs. 3B-3D (shows 2D), the first full paragraph in c. 4 (e.g. 8x8), and the paragraph bridging cols. 6-7 (vector corresponds to a 2D pixel array). Again, both Park and Rosenberg provide for the same type of coding by using memories for code words. It would've been obvious to one having ordinary skill in the art at the time the invention was made to use a two-dimensional array of pixels, as taught by Park, since encoding a 2D array using one code word is efficient in compression, and Park further provide for encoding using run length coding, which provides for further compression.

For claim 23, run length coding is not explicitly provided by Rosenberg, although run length coding is mentioned in the Background of Rosenberg. Park provides for further compression by run length and variable length coding in at least the first and second full

paragraphs of c. 7. It would've been obvious to one having ordinary skill in the art at the time the invention was made to run length code the output values of Rosenberg as taught by Park, since they both provide for pattern matching coding, and because Park provide for further compression, and thus further efficiency, by run length coding output values.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenberg et al., 5,450,562, as applied to claims 1-4, 6-8, 15, 20-22, and 24-25 above, and further in view of Nguyen et al., 6,205,252.

For claim 6, each slice is a two-dimensional array of pixels is not explicitly provided by Rosenberg, but is conventional and well known, and is provided by Nguyen in at least the last two full paragraphs in c. 4 teaching different two dimensional pixel arrays. Both Nguyen and Rosenberg provide for the same type of coding by using code words based on a plurality of pixels. It would've been obvious to one having ordinary skill in the art at the time the invention was made to use a two-dimensional array of pixels, as taught by Nguyen, since encoding a 2D array using one code word is efficient in compression, and Nguyen further provide for encoding using lossless LZ coding (the paragraph bridging cols. 3-4), which provides for further compression.

Allowable Subject Matter

7. Claims 9-14 and 16-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is an examiner's statement of reasons for allowance:

For claim 9, the prior art of record, does not suggest, in combination with the claim as a whole, wherein if the corresponding memory slice value is disposed at the lowest address in the memory store, then the comparing step further includes determining if a predetermined address above the lowest address in the memory store corresponds to the lowest address.

For claim 10, wherein the memory store possesses addresses, and wherein the step of comparing each input slice value to determine if the input slice value corresponds to a memory slice value in a memory store includes initially comparing each input slice value to a base cache

address, the location of the base cache address determined in a previous comparison, and comparing if no match is found at the base cache address, the input slice value to the lowest address in the memory and moving upwards until a match is found.

For claim 16, wherein if the item is a slice value, then the step of decompressing further includes reassembling a reconstructed image slice based on the slice value; outputting the reconstructed image slice; and storing the slice value read from the compressed image in the lowest address in the memory store while shifting the content of the memory store upwards.

For claim 17, wherein if the item is an encoded value and the encoded value corresponds to the lowest address in the memory store, then decompressing further includes reassembling a reconstructed image slice based on the slice value read from the memory store based on the encoded value; outputting the reconstructed image slice; and determining if a predetermined address above the lowest address in the memory store corresponds to the lowest address, and if the predetermined address above the lowest address does match the lowest address, then maintaining the content of the memory store.

For claim 18, wherein if the item is an encoded value and the encoded value corresponds to the lowest address in the memory store, then decompressing further includes reassembling a reconstructed image slice based on the slice value read from the memory store based on the encoded value; outputting the reconstructed image slice; and determining if a predetermined address above the lowest address in the memory store corresponds to the lowest address, and if the predetermined address above the lowest address does not match the lowest address, then storing the slice value read from the memory store in the lowest address in the memory store while shifting the content of the memory store upwards.

For claim 19, wherein if the item is an encoded value and the encoded value does not correspond to the lowest address in the memory store, then decompressing further includes reassembling a reconstructed image slice based on the slice value read from the memory store based on the encoded value; outputting the reconstructed image slice; and storing the slice value read from the memory in the lowest address in the memory store while shifting the content of the memory store upwards.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

Contact Information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy M. Johnson whose telephone number is (703) 306-3096, or the Supervisory Patent Examiner, Bhavesh M. Mehta, whose telephone number is (703) 308-5246.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone numbers are (703) 305-4700 or (703) 305-4750, or Customer Service at (703) 306-0377.

The Group Art Unit FAX number is 703-872-9314.

TJ
Timothy M. Johnson
Patent Examiner
Art Unit 2625
January 17, 2003


TIMOTHY M. JOHNSON
PRIMARY EXAMINER

Attachment for PTO-948 (Rev. 03/01, or earlier)
6/18/01

The below text replaces the pre-printed text under the heading, "Information on How to Effect Drawing Changes," on the back of the PTO-948 (Rev. 03/01, or earlier) form.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

1. Correction of Informalities -- 37 CFR 1.85

New corrected drawings must be filed with the changes **incorporated** therein. Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and centered within the top margin. If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings **MUST** be filed within the **THREE MONTH** shortened statutory period set for reply in the Notice of Allowability. Extensions of time may **NOT** be obtained under the provisions of 37 CFR 1.136(a) or (b) for filing the corrected drawings after the mailing of a Notice of Allowability. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

2. Corrections other than Informalities Noted by Draftsperson on form PTO-948.

All changes to the drawings, other than informalities noted by the Draftsperson, **MUST** be made in the same manner as above except that, normally, a highlighted (preferably red ink) sketch of the changes to be incorporated into the new drawings **MUST** be approved by the examiner before the application will be allowed. No changes will be permitted to be made, other than correction of informalities, unless the examiner has approved the proposed changes.

Timing of Corrections

Applicant is required to submit the drawing corrections within the time period set in the attached Office communication. See 37 CFR 1.85(a).

Failure to take corrective action within the set period will result in **ABANDONMENT** of the application.